

1660 S.W. 196th Avenue • Aloha, Oregon 97006

MODEL AT-10/AT-10AE INSTALLATION INSTRUCTIONS

The Model AT-10/AT-10AE AUTO-TROL® Battery Charger Control extends battery life, reduces maintenance and saves power by replacing existing timers on all makes of battery chargers so that batteries are fully charged, without being overcharged, each recharge cycle.

The Model AT-10/AT-10AE provides these desirable control features:

1. **Timer Trip Voltage Adjustment (TV):** This feature allows the control to be matched to differing battery/charger combinations. (See attached AT-10/AT-10AE Special Features Adjustment Sheet.)
2. **Overvoltage Shutdown (OVS):** Prevents overcharging due to charger malfunction. The OVS feature shuts off the charger immediately if the preset voltage level is reached at any time during the recharge cycle so the battery is not damaged.
3. **Backup Timer:** Again prevents overcharging if, for any reason, the charging cycle continues up to 14 hours.
4. **Equalize Charging:** Initiated by pressing the STOP/OFF button during the 45 second start-up delay.

These additional features are available for AUTO-TROL® model AT-10AE only:

5. **Auto-Equalize:** The Auto-Equalize feature automatically equalizes on a regular basis and is adjustable (see attached AT-10/AT-10AE Special Features Adjustment Sheet).
6. **Delayed Start (DS):** The delayed start feature is adjustable from 45 seconds to 6 hours after the battery is connected to the charger. (See attached AT-10/AT-10AE Special Features Adjustment Sheet.) You will often save on your power cost (peak demand charges) if the beginning of the battery charging cycle is delayed until the plant power demand is lower; i.e. 9 P.M.
7. **Spike Charge Limiting (SCLC):** This feature limits the charging of a fully charged battery to 25 minutes or less. (This feature is bypassed during the equalize mode.)
8. **Time Retention Latch (TRL) option:** Retains elapsed charge time if AC power is removed during the charging process. This option is primarily used when power management systems are present.
9. **LED Status Indicators:** Includes a red STOP LED, a green ON LED, a yellow EQUALIZE LED, and a red SHUTDOWN TIMEOUT LED.

EXPRESS WARRANTY

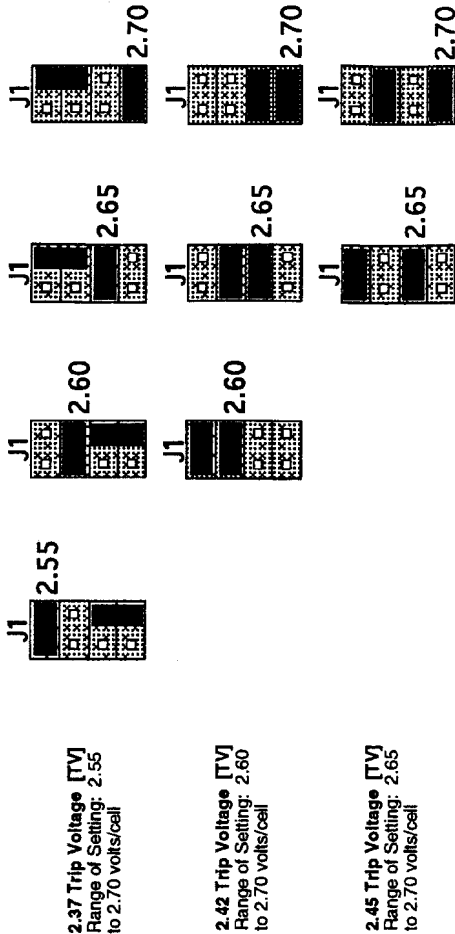
This product is warranted to be free of defects in material and workmanship under normal use for a period of one year. If defective product is encountered, return it for replacement free of charge. This express warranty is in lieu of any other warranty, express, implied or statutory, including without limitation, any warranty of fitness or merchantability. The sole liability of the manufacturer under this warranty is limited to replacing the defective product. This warranty shall not apply to any product which has been damaged by the improper usage, accident, neglect, alteration or abuse. The liability of the manufacturer is limited solely to replacing the defective product. In no event shall the manufacturer be liable for special or consequential damages to any buyer, user or other person.

AUTO-TROL® AT-10/AT-10AE SPECIAL FEATURE ADJUSTMENT

BEFORE installing the AUTO-TROL®, refer to the following settings for the MINI JUMPERS provided to configure the Jumper-Blocks as shown below.

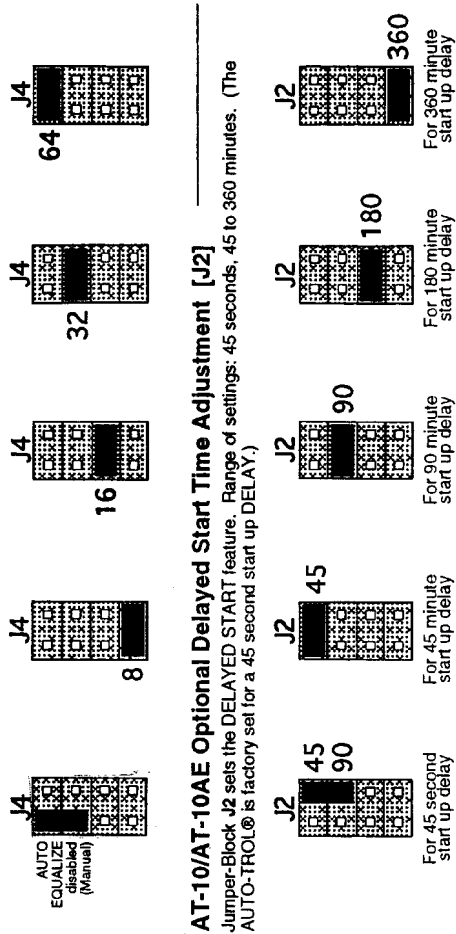
AT-10/AT-10AE Over-Voltage Shutdown (OVS) Adjustment [J1]

Jumper-Block J1 sets the over-voltage shutdown point. The setting range is from 2.55 volts/cell to 2.70 volts/cell in 0.05 volt increments. Jumper-Block J1 is also provided for field adjustment of the 3 Hour Timer Trip Voltage (TV). This adjustment is made by installing a second mini jumper on Jumper-Block J1. (The AUTO-TROL® is factory set for 2.70 volts/cell with a Trip Voltage of 2.37V.)



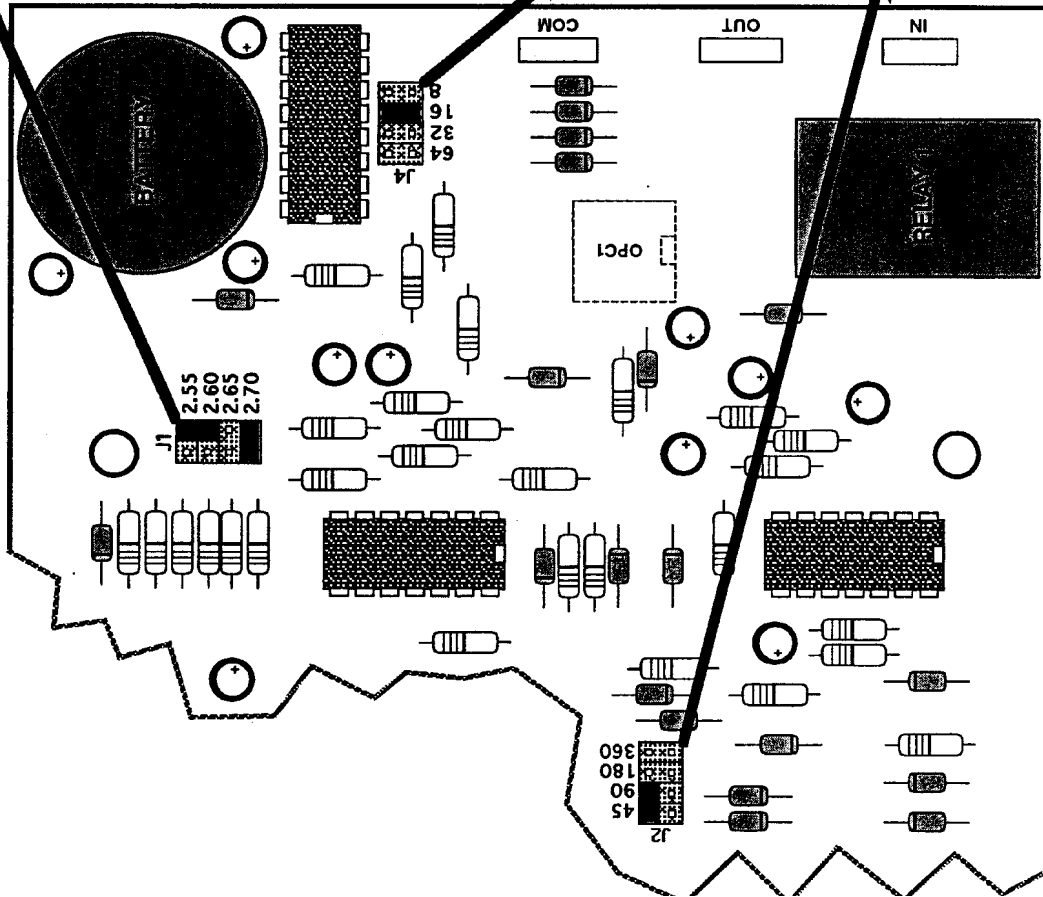
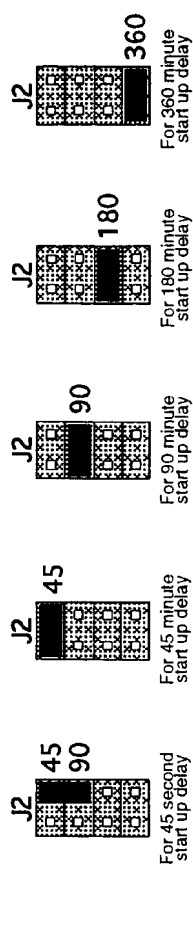
AT-10AE ONLY AUTO-EQUALIZE Frequency Adjustment [J4]

Jumper-Block J4 sets the number of recharge cycles between AUTO-EQUALIZE. Example: If the MINI JUMPER is placed on the pin labeled "8" and it's adjacent Common pin, the AUTO-TROL® will AUTO-EQUALIZE every 8th recharge cycle. Range of settings: no AUTO-EQUALIZE to AUTO-EQUALIZE every 64th recharge cycle. (The AUTO-TROL® is factory set to AUTO-EQUALIZE every 16th recharge cycle.)



AT-10/AT-10AE Optional Delayed Start Time Adjustment [J2]

Jumper-Block J2 sets the DELAYED START feature. Range of settings: 45 seconds, 45 to 360 minutes. (The AUTO-TROL® is factory set for a 45 second start up DELAY.)



AUTO-TROL® MODEL AT-10/AT-10AE DESCRIPTION OF OPERATION

Upon connection to a battery, there is a delay of approximately 45 seconds before the AUTO-TROL® unit turns the charger on. This delay is provided to allow the operator sufficient time to initiate the equalize mode, which is accomplished by pressing the STOP button.

NOTE: The equalize mode can only be initiated by pressing the STOP/OFF button during the start-up delay period.

The charging process will continue once started until one of the following occurs:

- a) The AUTO-TROL® shuts down the charger when the battery is fully charged.
- b) If the battery fails to charge properly, the safety backup timer will shutdown the charger after 14 hours.
- c) If the battery voltage exceeds the Over Voltage Shutdown (OVS) setting at anytime (i.e., charger malfunction).
- d) The STOP/OFF button is pushed, terminating the charging process.

Once the AUTO-TROL® is off, a new charge cycle cannot be started until the battery has been disconnected and reconnected.

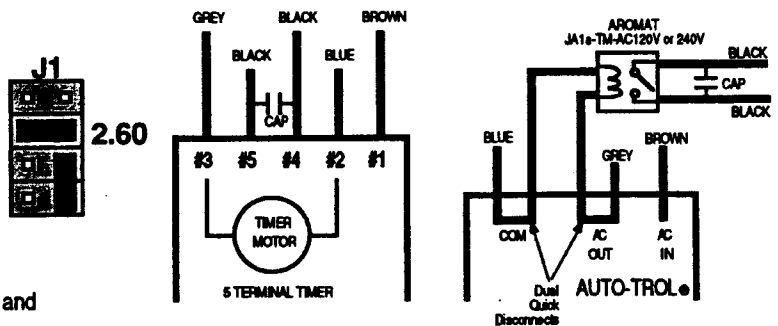
AUTO-TROL® MODEL AT-10/AT-10AE INSTALLATION INSTRUCTIONS

1. Disconnect or turn off AC power to battery charger.
2. Verify that the charger has an AC power contactor. If it does not have one, an AC power contactor (P&B model #PRD7AYO-XXX or equivalent) must be installed.
3. Remove existing timer.
4. Use **TEMPLATE** to locate and drill the required holes, then mount the AUTO-TROL®.

LA MARCHE A45 SERIES (5 terminal type)

5. Configure J1 for 2.60 volts per cell:
6. Connect wires as follows:

TIMER TERMINAL	WIRE COLOR	AUTO-TROL® TERMINAL
#1	BROWN	AC IN
#2	BLUE	COM
#3	GREY	AC OUT
#4 & 5	BLACK	auxiliary contactor

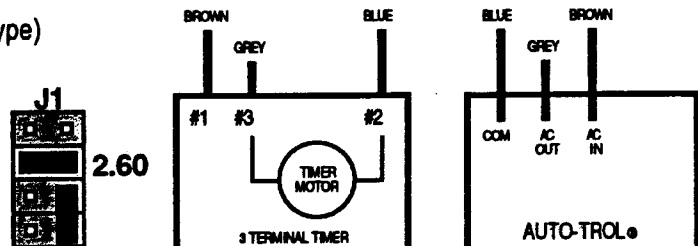


7. Install the auxiliary contactor above the AUTO-TROL® and connect the wires as illustrated.
8. Connect wires from the AUTO-TROL® to DC output: RED to POSITIVE (+), BLACK to NEGATIVE (-).

LA MARCHE A7 & A45 SERIES (3 terminal type)

5. Configure J1 for 2.60 volts per cell:
6. Connect wires as follows:

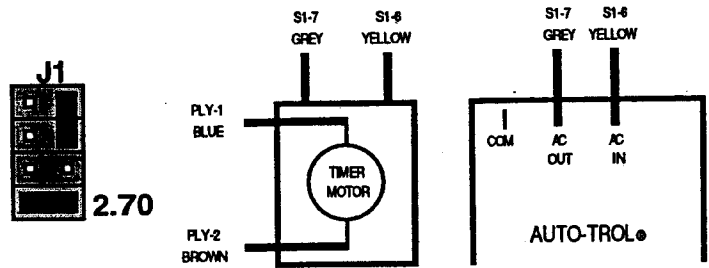
TIMER TERMINAL	WIRE COLOR	AUTO-TROL® TERMINAL
#1	BROWN	AC IN
#2	BLUE	COM
#3	GREY	AC OUT



7. Connect wires from the AUTO-TROL® to DC output: RED to POSITIVE (+), BLACK to NEGATIVE (-).

GBC/HERTNER Model TF/3TF

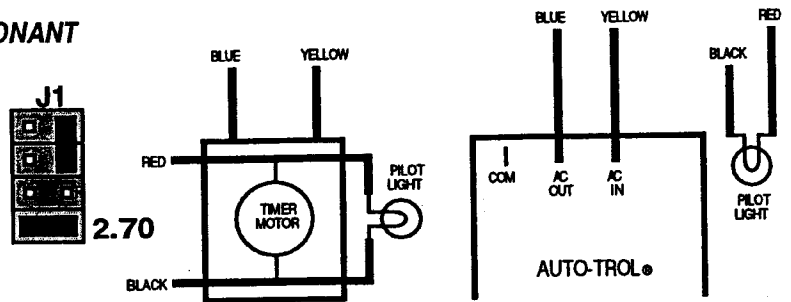
5. Configure J1 for 2.70 volts per cell:
6. Connect wires as follows:
 - a) Disconnect and tape off wires PLY-1 (Blue) and PLY-2 (Brown) going to the timer motor.
 - b) Connect wire S1-6 (Yellow) from AC Line (L3) to AC IN.
 - c) Connect wire S1-7 (Grey) from contactor coil to AC OUT.



7. Connect leads from the AUTO-TROL® to DC output terminals: RED to POSITIVE (+), BLACK to NEGATIVE (-).

HOBART, GOULD , HESTER, FERRO - RESONANT

5. Configure J1 for 2.70 volts per cell:
6. Connect wires as follows:
 - a) YELLOW wire (from AC Line) to AC IN.
 - b) BLUE wire (from contactor) to AC OUT.
 - c) Connect RED wire from charger and PILOT LIGHT together and insulate.
 - e) Connect BLACK wire from charger and PILOT LIGHT together and insulate.

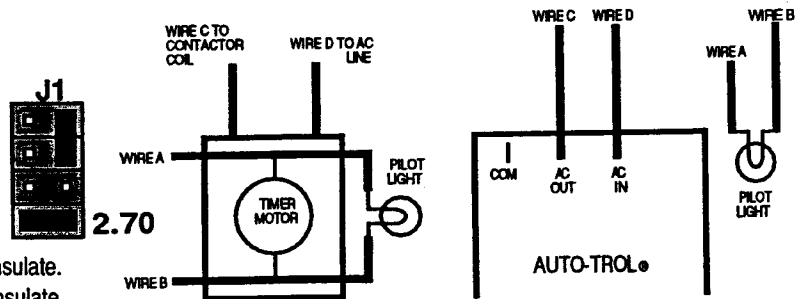


7. Connect wires from the AUTO-TROL® to DC output: RED to POSITIVE (+), BLACK to NEGATIVE (-).

CHLORIDE, CRUSADER , FERRO - RESONANT (EXIDE & PACIFIC FERROMATE similar)

NOTE: Wire numbers may vary unit to unit.

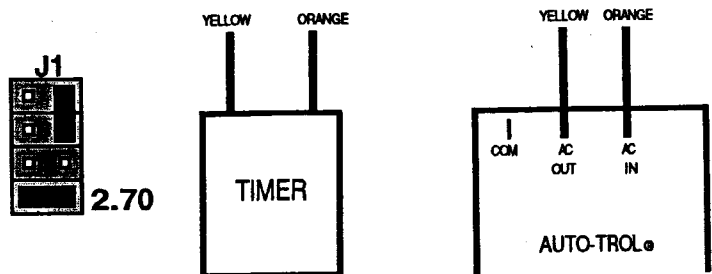
5. Configure J1 for 2.70 volts per cell:
6. Connect wires as follows:
 - a) Wire D (from AC Line) to AC IN.
 - b) Wire C (from contactor) to AC OUT.
 - c) Connect wire A and PILOT LIGHT together and insulate.
 - d) Connect wire B and PILOT LIGHT together and insulate.



7. Connect wires from the AUTO-TROL® to DC output: RED to POSITIVE (+), BLACK to NEGATIVE (-).

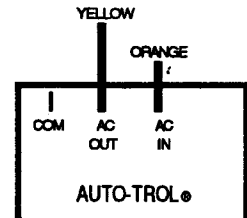
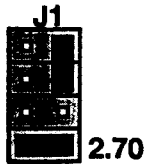
C&D AUTO-REG

5. Configure J1 for 2.70 volts per cell:
6. Connect wires as follows:
 - a) YELLOW wire (from contactor coil) to AC OUT.
 - b) ORANGE wire (from AC Line) to AC IN.
7. Connect wires from the AUTO-TROL® to DC output: RED to POSITIVE (+), BLACK to NEGATIVE (-).



C&D AUTO-REG FR SERIES (with 24vac control)

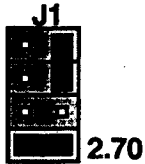
5. Configure J1 for 2.70 volts per cell:
6. Connect wires as follows:
 - a) YELLOW wire (from contactor coil) to AC OUT.
 - b) ORANGE wire (from control transformer) to AC IN.



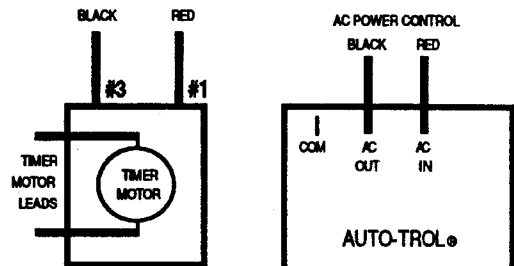
7. Connect wires from the AUTO-TROL® to DC output: RED to POSITIVE (+), BLACK to NEGATIVE (-).

IBE CVC SERIES

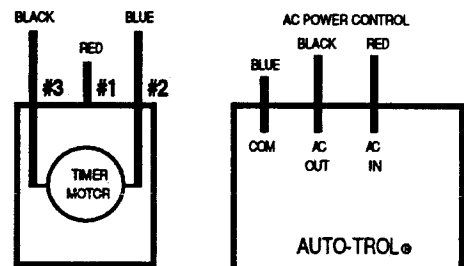
5. Configure J1 for 2.70 volts per cell:
6. The charger **MUST** have an AC contactor or magnetic switch (some models do not). If the charger does **NOT** have one, then a contactor must be installed to handle the main AC power.
7. Connect wires from the AUTO-TROL® to DC output terminals: RED to POSITIVE (+), BLACK to NEGATIVE (-).



Timer Motor separate from AC Control circuit

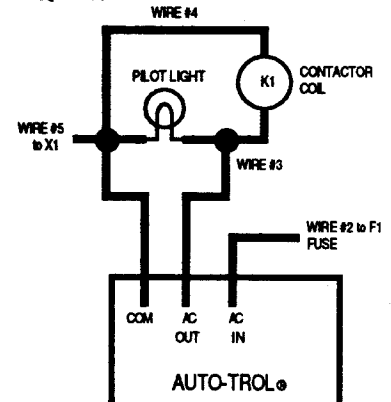
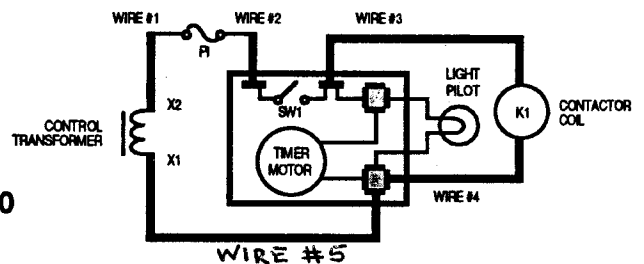
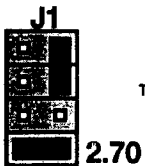


Timer Motor common to AC Control circuit



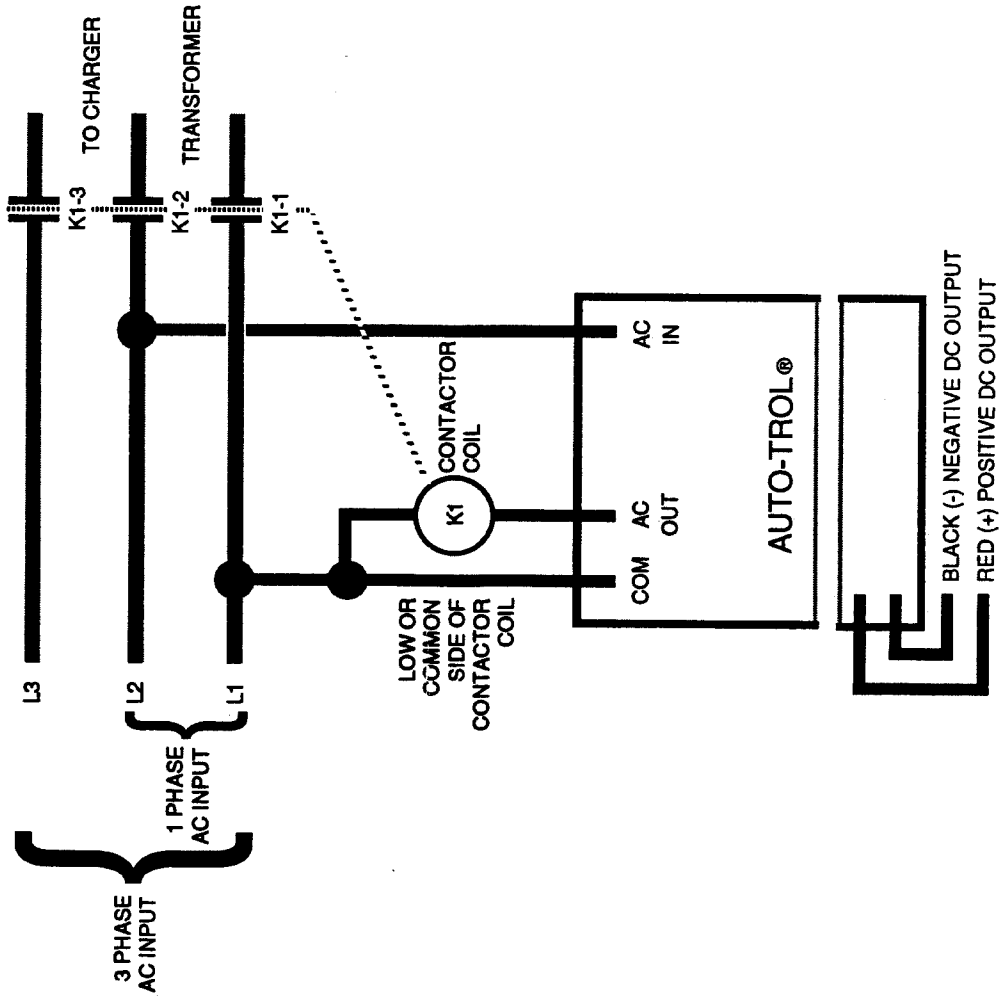
MOTOR APPLIANCE CORP. (MAC) Chargers

5. Configure J1 for 2.70 volts per cell:
6. Connect wires as follows:
 - a) WIRE #2 (from fused side of CONTROL TRANSFORMER X2) to AC IN.
 - b) Splice WIRE #3 (from CONTACTOR COIL K1) and PILOT LIGHT lead together and connect to AC OUT.
 - c) Splice WIRE #4 (from CONTACTOR COIL K1), PILOT LIGHT lead, and WIRE #5 (from CONTROL TRANSFORMER X1) together and connect to COM.
7. Connect wires from the AUTO-TROL® to DC output terminals: RED to POSITIVE (+), BLACK to NEGATIVE (-).

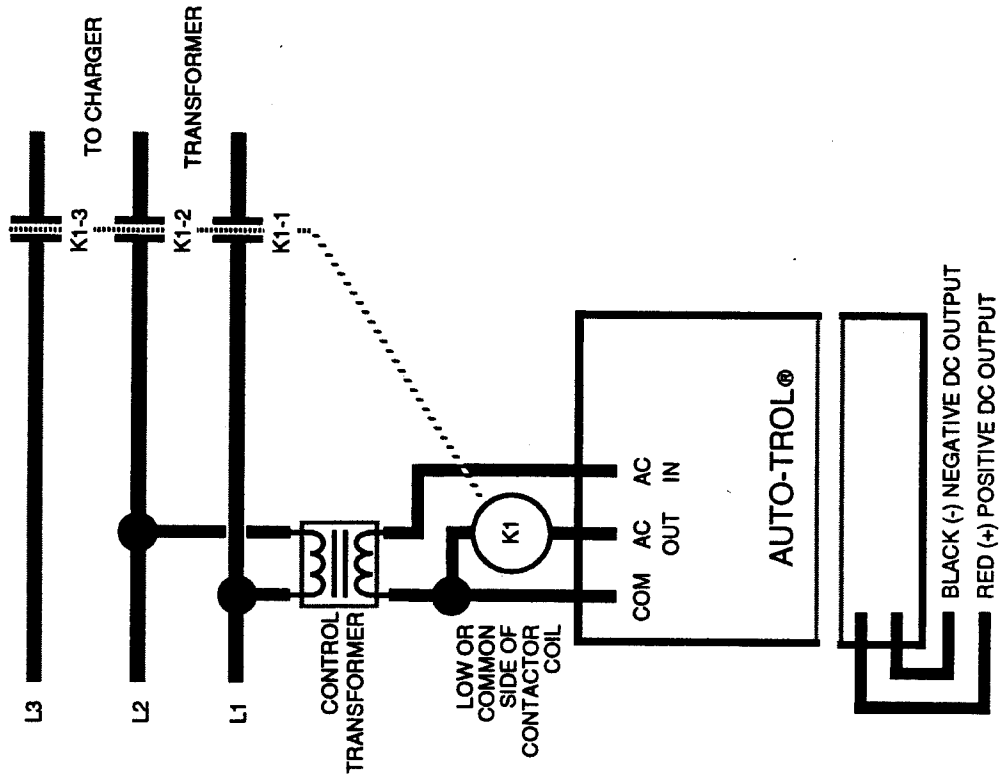


TYPICAL SCHEMATIC INSTALLATION

WITHOUT A CONTROL TRANSFORMER



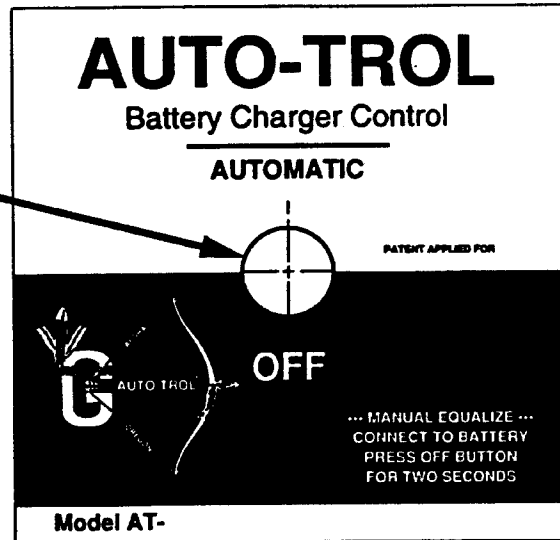
WITH A CONTROL TRANSFORMER



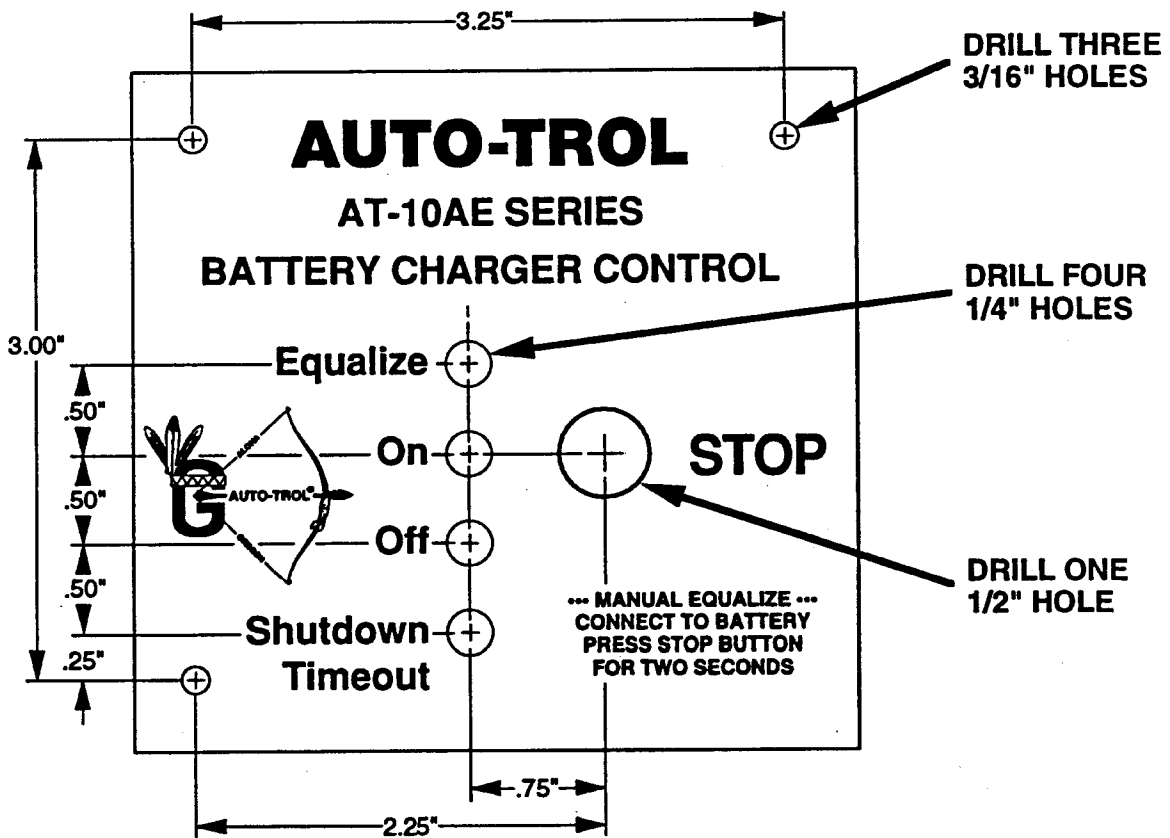
AUTO-TROL® MODEL AT-10/AT-10AE FRONT PANEL MOUNTING TEMPLATE

FOR MODEL AT-10

DRILL ONE 1/2" HOLE

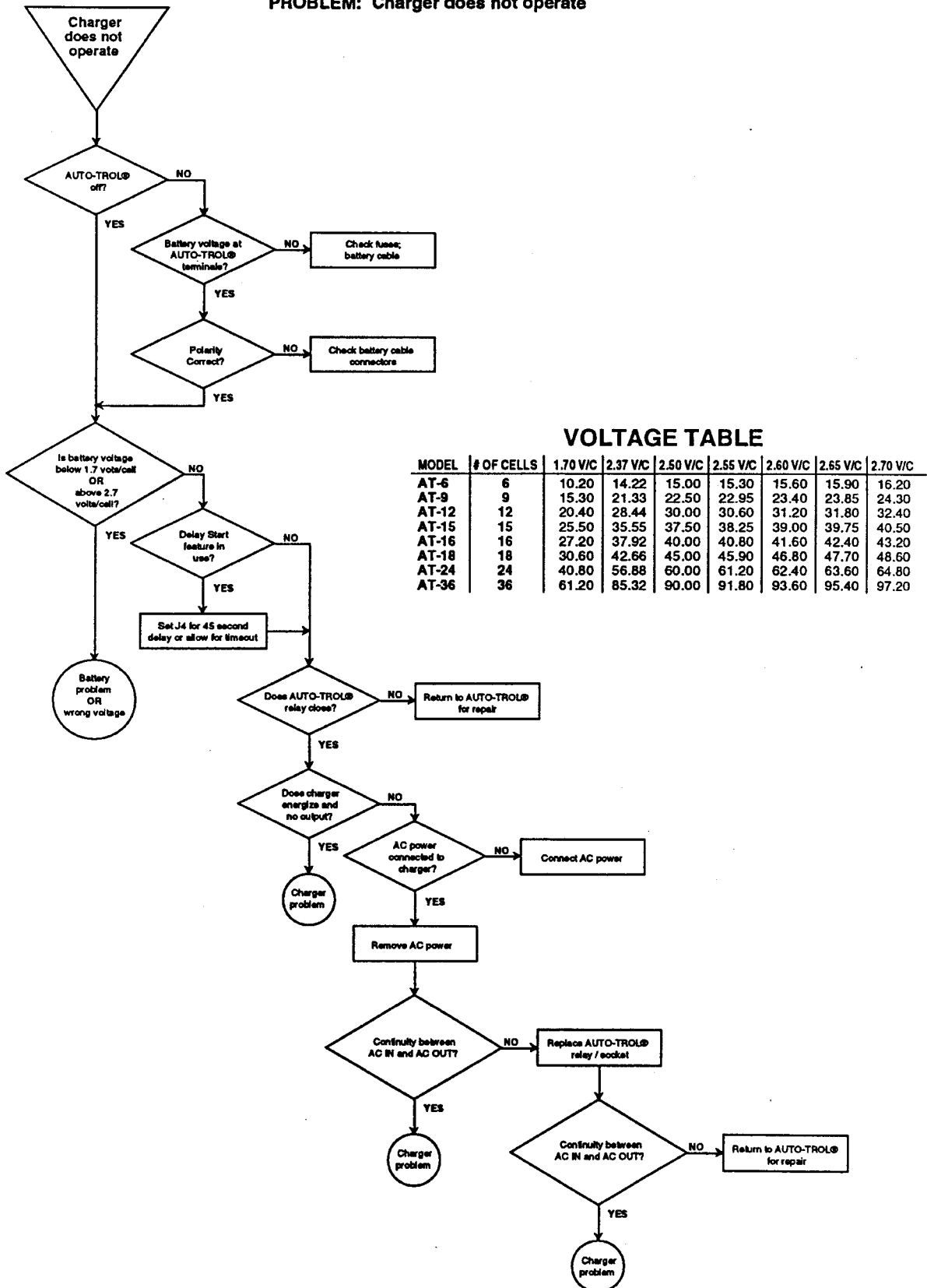


FOR MODEL AT-10AE



AUTO-TROL® AT-10/AT-10AE TESTING INSTRUCTIONS

PROBLEM: Charger does not operate



VOLTAGE TABLE

MODEL	# OF CELLS	1.70 V/C	2.37 V/C	2.50 V/C	2.55 V/C	2.60 V/C	2.65 V/C	2.70 V/C
AT-6	6	10.20	14.22	15.00	15.30	15.60	15.90	16.20
AT-9	9	15.30	21.33	22.50	22.95	23.40	23.85	24.30
AT-12	12	20.40	28.44	30.00	30.60	31.20	31.80	32.40
AT-15	15	25.50	35.55	37.50	38.25	39.00	39.75	40.50
AT-16	16	27.20	37.92	40.00	40.80	41.60	42.40	43.20
AT-18	18	30.60	42.66	45.00	45.90	46.80	47.70	48.60
AT-24	24	40.80	56.88	60.00	61.20	62.40	63.60	64.80
AT-36	36	61.20	85.32	90.00	91.80	93.60	95.40	97.20

AUTO-TROL® AT-10/AT-10AE TESTING INSTRUCTIONS

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PROBLEM: Equalize LED always/never lights

